

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)	HANSE et al.
Title)	Thermal shock resistant casting element and
)	manufacturing process thereof.
Application Number)	10/509501
Filing Date)	28 March 2004
Group Art Number)	1725
Examiner)	Lin, Ing Hour
Attorney Docket No.)	1396 US (06-50)


Commissioner for Patents
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Sir:

AFFIDAVIT UNDER 37 C.F.R. 1.132

I, Eric Hanse, hereby swear and state that:

1. I have been active in the field of refractory ceramics for the last 20 years.
2. I am currently employed by the Vesuvius France, a subsidiary of Vesuvius Crucible Company, which has more than \$1 billion in worldwide refractory sales.
3. I hold a degree in Chemical Engineering from the ISIC University of Mons in Belgium.
4. I am the author or co-author of 10 papers in the field of ceramic engineering.
5. I hold 16 patents or patent applications in the field of ceramic engineering, particularly relating to ceramic articles and mechanisms in the iron and steel industry.
6. I am very familiar with refractory compositions and articles that are used in the molten metal industry, including their methods of use and manufacture.
7. For the past years, I have concentrated on refractory ceramic articles, particularly on pouring shrouds and more particularly ladle shrouds, for use in the continuous casting of steel.

February 20th 2007


8. I have supervised numerous experimental and commercial installations of pouring shrouds; have witnessed the use of pouring shroud in commercial operation; and am very familiar with the requirements and problems arising with pouring shrouds.
9. I am familiar with pouring shrouds having the Rancoule coating as claimed in US 4,951,852.
10. The Rancoule coating is used to protect a pouring shroud from thermal shock, which would occur when the pouring shroud is put into service and the temperature of the pouring shroud goes from ambient to that of molten steel.
11. The Rancoule coating comprises silica, ceramic fiber and minor portion of glass-forming frits that will vitrify at steel casting temperatures.
12. The Rancoule coating fails as a gas-impermeable layer for at least two reasons.
13. First, the frit comprises the minor portion of the coating and the vitrified frit is unlikely to form a continuous gas-impermeable layer - a gas-impermeable material that is not continuous cannot be said to form a gas-impermeable layer because gas would simply migrate through more permeable regions.
14. Second, the Rancoule coating forms low melting point compounds that do not remain in place for more than a few minutes because molten steel washes the Rancoule coating from the walls of the pouring shroud before the Rancoule coating could be an effective gas-impermeable layer.
15. I have examined used pouring shrouds that had the Rancoule coating and have not observed a gas-impermeable layer or even the residue of such a layer.
16. In contrast, the coating of the present invention vitrifies to form a gas-impermeable layer that remains on the pouring shroud both during and after use so that the coating functionally acts to restrict gas diffusion through the wall of the pouring shroud and into the steel.
17. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: February 20th 2007


Eric Hanse